CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No: CTCE/BBMP/W.No.03/DSP/WMM/Gradation/2014-15 15.10.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : Asst. Executive Engineer, Yelahanka New Town Sub Division, BBMP, Bangalore.

Agency : Mr. H.S. Pakkashamurthy, Contractor, Bangalore.

Name of Work : Providing asphalting and BS slab drains at law college cross roads in Attur, Ward No.03, BBMP, Bangalore.

Reference : BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014

Date of Testing : 15.10.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 25560

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Comulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	865	865	3.4	96.6	95-100
22.4	5915	6780	26.5	73.5	60-80
11.2	5265	12045	47.1	52.9	40-60
4.75	4210	16255	63.6	36.4	25-40
2.36	3845	20100	78.6	21.4	15-30
0.600	2360	22460	87.9	12.1	8-22
0.075	2615	25075	98.1	1.9	0-8

Note:

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Lab No:CTCE/BBMP/W.No.03/HSP/Q8/SDBC)/2014-15 02.11.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	Asst. Executive Engineer, Yelahanka New Town Sub Division, BBMP, Bangalore.
AGENCY	:	Mr. H.S. Palakashamurthy, Contractor, Bangalore.
NAME OF THE WORK	:	Providing asphalting and RS slab drains at law college cross roads at Amrit, Ward No.03, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
SAMPLE ID	:	Bitumen
DATE OF TESTING	:	02.11.2014

The results of the tests conducted on the bitumen sample

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS:1203 -1978 (RA-2009)	86	80 to 100
2	Softening point, °C	IS:1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27°C, cm	IS:1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS:1209 -1978 (RA-2009)	292	Min. 220

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Job No: CTCE/BBMP/WNo.03/HSP/SDBC/AIV/2014-15 02.11.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Prakashmurthy, Contractor, Bangalore.
Name of the Work	Providing asphalting and BS slab drains at law college cross roads in Amur, Ward No.03, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	02.11.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	387	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	83	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines $100 (W_2/W_1)\%$	21.67	22.48	22.08

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.03/HSP/SDBC/Shape_T/2014-15 : 02.11.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Palakshamurthy,** Contractor, Bangalore.
Name of Work	: Providing asphalting and BS slab drains at kew college cross roads in Attur, Ward No.03, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 02.11.2014

Result : Flakiness Index = **11.62%**

Elongation Index = **13.79%**

Result : Combined Flakiness & Elongation index **25.41%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%.

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Job No : CTCE/BBMP/WNo.03/HSP/SDBC/Stripping/2014-15 03.11.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Palakashamurthy,** Contractor, Bangalore.
Name of the work	Providing asphalting and RS slab drains at law college cross roads in Attur, Ward No.03, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	03.11.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.500 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.30	96.70
2	3.3		
3	3.4		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No: CTCE/BBMP/WNo.03/ESP/SDBC/Sp_Wt/2014-15 03.11.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	Asst. Executive Engineer, Yelahanka New Town Sub Division, BBMP, Bangalore
Agency	Mr. H.S. Palakshamurthy, Contractor, Bangalore.
Name of the Work	Providing asphalting and BS slab drains at law college cross roads in Ward No.03, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	03.11.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2011	2012	2013	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_3$ g	1256	1257	1258	
4	Weight of saturated surface dry aggregate in air	W_4 g	2019	2020	2021	
5	Weight of water equal to the volume of the aggregate	$(W_4 - W_3)$ g	763	763	763	
6	Weight of oven dried aggregate	W_5 g	2002	2005	2007	
7	Specific Gravity	$W_5/(W_4-W_3)$	2.624	2.625	2.630	2.626
8	Apparent Specific gravity	$W_5/(W_5-W_3)$	2.684	2.685	2.680	2.683
9	Water Absorption	$(W_4 - W_5) * 100 / W_5$	0.85%	0.85%	0.70%	0.80%

Comments:

– Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0% .

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Job No:CTCE/BBMP/W.No.03/HSP/SDBC/AGG/2014-15 03.11.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Palakashamurthy,** Contractor, Bangalore.
Name of the Work	Providing asphalting and BS slab drains at law college cross roads in Amur, Ward No.03, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/492/2014-15 Dated: 13.10.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	03.11.2014

Total Weight of Sample: 5125 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	395	7.7	7.71	92.29	90-100	
4.75	2650	51.7	59.41	40.59	35-51	
2.36	715	14.0	73.37	26.63	24-39	
1.18	515	10.0	83.41	16.59	15-30	
0.3	300	5.9	89.27	10.73	9-19	
0.075	250	4.9	94.15	5.85	3-8	

Total Weight of Sample: 5155 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	250	4.8	4.85	95.15	90-100	
4.75	2568	49.8	54.61	45.39	35-51	
2.36	835	16.2	70.84	29.19	24-39	
1.18	515	10.0	80.80	19.20	15-30	
0.3	345	6.7	87.49	12.51	9-19	
0.075	325	6.3	93.79	6.21	3-8	

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